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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/733,855

12/10/2003

Peter A. Carr

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8059

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EXAMINER

LU, FRANK WEI MIN

ART UNIT

PAPER NUMBER

1634

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/22/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/733,855

Applicant(s)

CARR ET AL.

Examiner

Frank W. Lu

Art Unit

1634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 1-3 and 6-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4, 5, and 11-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 September 2004 and 30 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/4/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1634

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group II, claims 4 and 5 in the reply filed on December 4, 2006 is acknowledged. Since new claims 11-13 have been added, claims 4, 5, and 11-13 will be examined.

Specification

2. The disclosure is objected to because of the following informalities: although there are Figures 1A to 1F, 2A to 2G, 3A to 3D, 6A, 6B, 8A to 8C, 9A, 9B, 11A, 11B, 12A, 12B, 13A, 13B, 14A, 14B, 15A to 15G, 16A to 16C, 20A and 20B, 21A and 21B, 23A and 23B, BRIEF DESCRIPTION OF THE DRAWINGS only describes Figures 1-3, 6, 8, 9, 11-16, 20, 21, and 23.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 11 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claim 11 is rejected as vague and indefinite because it is unclear how monitoring the deprotection of the 5' protecting group is related to employing a channel opening. Note that the specification only describes that DNA is synthesized on a non-fluorescent solid support and

Art Unit: 1634

passes through a channel opening, known in the art as a nanopore, with a detector (see page 40, [0135] and claim 4). Please clarify.

6. Claim 12 recites the limitation “the force” in the claim. There is insufficient antecedent basis for this limitation in the claim because there is no word “force” in claim 5. Please clarify.

7. Claim 12 recites the limitation “the growth nucleic acid molecule” in the claim. There is insufficient antecedent basis for this limitation in the claim because there is no phrase “growth nucleic acid molecule” in claim 5. Please clarify

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 4 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Bass *et al.*, (US Patent No. 6,939,673 B2, filed on June 14, 2002).

Regarding claim 4, Bass *et al.*, teach providing a solid support for synthesis of nucleic acid, synthesizing nucleic acid attached to the solid support, passing the solid support and newly synthesized nucleic acid through a channel opening (ie., removing the support having the synthesized nucleic acids with an error from the reaction chamber to a holding chamber wherein the holding chamber is a channel with an opening, see column 4, lines 1-15), detecting errors

Art Unit: 1634

(ie., the error in the deposition) in nucleic acid synthesis, and correcting errors in nucleic acid synthesis (see columns 3 and 4, column 6, lines 39-54, and claim 1 in columns 22-24).

Regarding claim 5, Bass *et al.*, teach synthesizing nucleic acids with 5' protecting groups, monitoring the deprotection of the 5' protecting group (ie., see column 10, lines 38-67, column 11, lines 1-20, and claim 1 in columns 22-24), detecting errors (ie., the error in the deposition) in nucleic acid synthesis, and correcting errors in nucleic acid synthesis (see columns 3 and 4, column 6, lines 39-54, and claim 1 in columns 22-24).

Therefore, Bass *et al.*, teach all limitations recited in claims 4 and 5.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 1634

11. Claim 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bass *et al.*, as applied to claims 4 and 5 above, and further in view of White *et al.*, (US Patent No. 7,062,385 B2, filed on November 25, 2002).

The teachings of Bass *et al.*, have been summarized previously, *supra*.

Bass *et al.*, do not disclose that a plurality of reactions are carried out in parallel using plurality of light sources and detectors as recited in claim 13. However, Bass *et al.*, teach that a plurality of reactions (ie., the nucleic acid synthesis reactions in multiple locations of the surface of the support) are carried out in parallel using a light source and a detector (see column 14, lines 27-61, column 21, lines 59-67, column 22, lines 1-24 and claim 1 in columns 22-24).

White *et al.*, teach that a system comprising plurality of light sources and detectors as recited in claim 13 (see column 6, lines 1-31).

Therefore, it would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to have performed the method recited in claim 13 wherein a plurality of reactions are carried out in parallel using plurality of light sources and detectors in view of the prior art of Bass *et al.*, and White *et al.*. One having ordinary skill in the art would have been motivated to do so because the system comprising plurality of light sources and detectors taught by White *et al.*, has high sensitivity, discrimination, and detection capability for a variety of target analytes (see column 5, lines 1-20). One having ordinary skill in the art at the time the invention was made would have been a reasonable expectation of success to perform the method recited in claim 13 using the system comprising plurality of light sources and detectors taught by White *et al.*.

Art Unit: 1634

Conclusion

12. No claim is allowed.

13. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993)(See 37 CAR § 1.6(d)). The CM Fax Center number is (571)273-8300.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank Lu, Ph.D., whose telephone number is (571)272-0746.

The examiner can normally be reached on Monday-Friday from 9 A.M. to 5 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla, can be reached on (571)272-0735.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

February 16, 2007



FRANK LU
PRIMARY EXAMINER